

WHAT IS CLAIMED IS:

1. A metal electrode built on a wire which is formed on a substrate, said metal electrode comprising multiple metallic layers including at least a first layer and a second layer lying from an outermost surface of said metal electrode toward the substrate in this order, wherein the first layer contains tin as a principal constituent, the second layer contains a metallic element which produces an eutectic reaction with tin, and the melting point of the first layer is higher than that of the second layer.

2. The metal electrode according to claim 1, wherein the metallic element which produces the eutectic reaction with tin is indium.

3. The metal electrode according to claim 1, wherein the temperature at which the metallic element of the second layer produces the eutectic reaction with tin is equal to or lower than 221°C.

4. The metal electrode according to claim 1, wherein the wire contains aluminum as a principal constituent, and the metallic layers of said metal electrode further includes a third layer containing copper as a principal constituent, a fourth layer containing gold as a principal

constituent, and a fifth layer containing nickel as a principal constituent lying in this order toward the substrate between the second layer and the wire.

5. The metal electrode according to claim 4, wherein the first to fifth metallic layers are formed by electroless plating processes.

6. A method of joining a metal electrode built on a wire which is formed on a substrate to a circuit card of which joint surface is formed of a material which diffuses into tin when heated, said metal electrode comprising multiple metallic layers including at least a first layer and a second layer lying from an outermost surface of said metal electrode toward the substrate in this order, wherein the first layer contains tin as a principal constituent, the second layer contains a metallic element which produces an eutectic reaction with tin, and the melting point of the first layer is higher than that of the second layer, and said method comprising the steps of:

bringing said metal electrode in contact with the joint surface of said circuit card; and

heating said metal electrode at a temperature equal to or higher than the lowest one of temperatures at which eutectic reaction occurs between the first and second

layers but lower than the melting point of the first layer.